

Center for Integrated Nanotechnologies (CINT) Core Facility

Site Specific Training

Revised: 2/2012

Topics

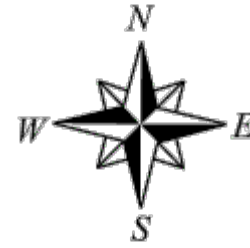
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- Badges
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Safety



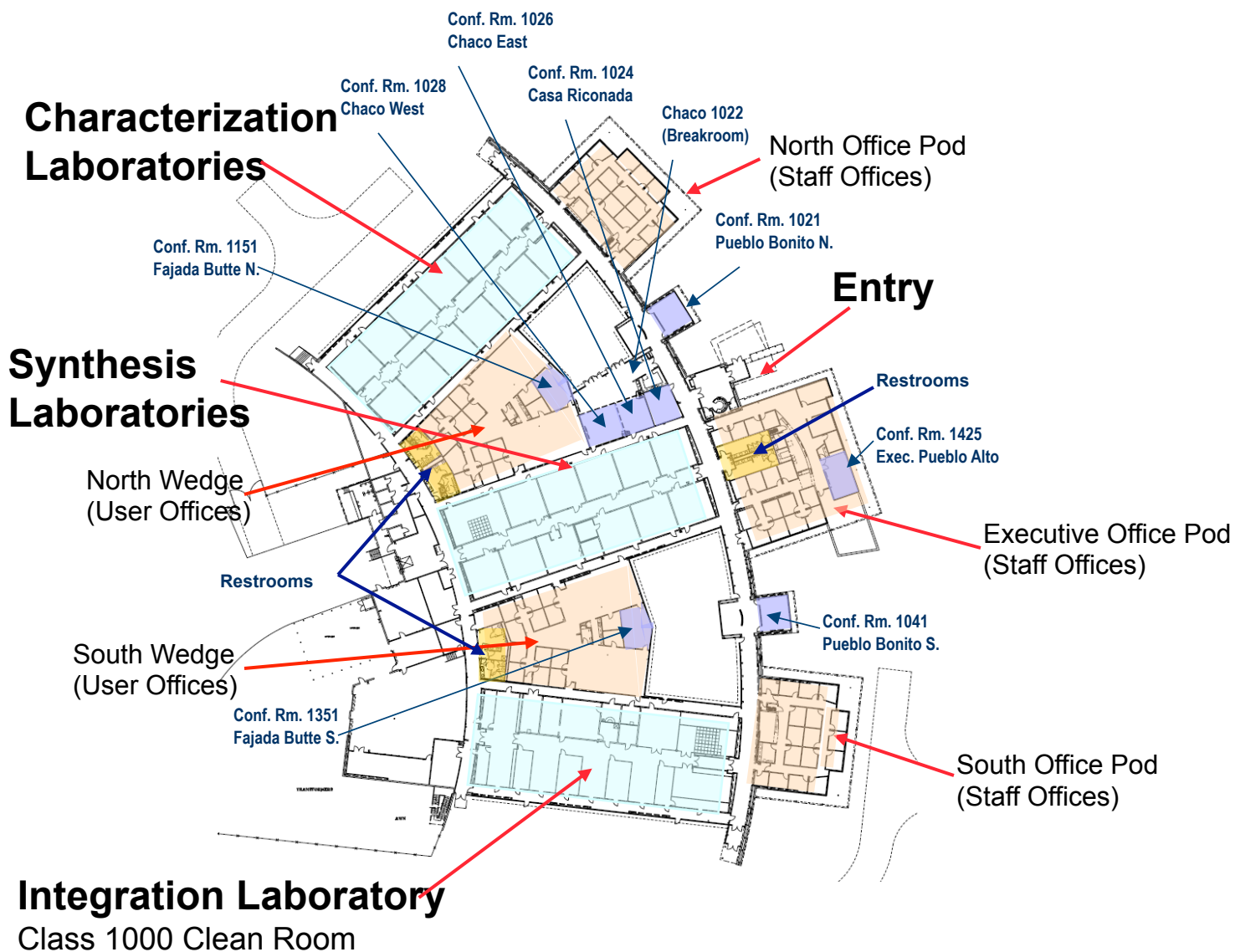
Security

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Location and Layout

- SNL/NM (DOE leased land)
- North of Kirtland Air Force Base (KAFB), west of Eubank Gate
- Comprised of three wings: Characterization Labs, Synthesis Labs, Integration Lab
- Staff offices, chemical storage room, loading dock area



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Badges



- All Sandia personnel, resident contractors, and visitors will wear a Sandia-issued, photo-badge at all times in Building 518.
- Short-term, U.S. citizen visitors (3 days or less) may be issued a numbered (“Building badge”) instead of a photo-badge and must sign the visitor’s log upon entering/exiting the building.
- All Foreign National Visitors must obtain a photo-badge from the Sandia badge office. Building badges cannot be issued to Foreign National visitors.

Where can I go?



- The lobby is the ONLY publically-accessible area in Building 518.
- Entry into all other areas of the CINT Core Facility requires a Sandia-issued badge.
- Access to areas depends on business needs and is controlled by electronic badge readers.

General Access Questions:

1. My daughter wants to become a scientist when she grows up. Can I show her my lab?
2. My friend from graduate school just called me. He's in Albuquerque today. Can he come to CINT this afternoon?
3. I'm a CINT staff member and I left my Sandia badge at home. Can I get a building badge just for today?

General Access Answers:

1. My daughter wants to become a scientist when she grows up. Can I show her my lab?
Unfortunately, no. Family may not enter the building, except during a designated family day.
2. My friend from graduate school just called me. He's in Albuquerque today. Can he come to CINT this afternoon?
No, old friends may not come to visit CINT, unless it is CINT related (e.g. potential future collaboration).
3. I'm a CINT staff member and I left my Sandia badge at home. Can I get a building badge just for today?
No, building badges may not be issued to Sandians under any circumstances.

Foreign Nationals at CINT

- **Foreign National (FN) definition:** Any person who is not a citizen of the U.S., **or is not a lawful permanent resident**, or is not a protected individual.
- **Identification:** Foreign Nationals must wear a Sandia uncleared (“red”) badge.



Foreign National **Restricted Access:** CINT Office Pods

- **Restricted Access: All Foreign Nationals must be escorted in the office pods at the CINT Core Facility**
 - When a Foreign National is escorted into one of the office pods, the escort must remain with the Foreign National at all times until the escort responsibility is transferred to someone else within the office pod or the individual exits the office pod.
 - **Access hours: Standard Foreign National access hours apply, providing they are escorted in the pods at all times.**

Foreign National Access: Other CINT Areas

- Foreign Nationals do not have to be escorted but should be **monitored** in all other areas in the CINT Core Facility.
 - Who can be the **monitor**? Answer: Anyone who is willing to accept responsibility for the FNR's actions
 - Responsibilities of the **monitor** include:
 - Ensuring FNs are aware of and restricted to authorized scopes of work and specified visit locations (e.g. buildings and rooms)
 - Maintaining an awareness of what FNs are doing by periodically checking their work and requesting feedback regarding their activities
 - Periodically checking on the FNs' whereabouts
- **Access hours: 7 Days a week, 6AM-12AM**

Restricted Access Questions:

1. I just saw someone with a red badge talking to someone in the North office pod. Is that OK?
2. Is a Foreign National user allowed to work alone in a lab?
3. Are Los Alamos employees allowed in the office pods?

Restricted Access Answers:

1. I just saw someone with a red badge talking to someone in the North office pod. Is that OK?

Yes, as long as they're escorted by a Sandia employee who is a US citizen, foreign nationals are authorized in the office pods.

2. Is a Foreign National user allowed to work alone in a lab?

Foreign Nationals who have completed the necessary training, have the authorization of the Lab owner, and are adhering to the access hours are authorized to work in the lab alone.

3. Are Los Alamos employees allowed in the office pods?

Yes, LANL employees are authorized in the pods. (If they're Foreign Nationals, they must be escorted at all times when in the pods)

Prohibited items: General Rules

Sandia National Laboratories is a drug-free and a tobacco-free environment.

The use or sale of tobacco products on Sandia controlled property is prohibited.

Sandia property includes SNL vehicles, building interiors, exteriors, entryways, walkways, parking lots, fenced areas, interior of personal vehicles parked on Sandia controlled property, and portions of buildings controlled by Sandia.

Prohibited items: CINT-specific

➤ The following items are NOT permitted in the CINT Core Facility

- Alcohol and alcoholic beverages
- Controlled substances (illegal drugs and associated paraphernalia)
- Explosives, flammables, radioactive materials, or chemicals
- Firearms, weapons, or incendiaries
- Any other items prohibited by law
- Radio frequency transmitting equipment
- Audio, video, optical, and data recording devices (i.e. non Sandia-owned BlackBerrys; all iPods and MP3 players.)

Prohibited items (exceptions)

- Cell phones and computers are allowed (with conditions), as explained below:
 - Cell phones are allowed in the facility and may be operated in the facility only if the additional phone features (i.e. camera and data port) are NOT used while in the facility.
 - Permission to bring computers into the building can be obtained by following the procedures specified in the IM100 series documents within the Corporate Policy System.

Prohibited Items Questions:

1. I can't remember what electronic gadgets are prohibited in CINT and the rules seem to change often. Where can I get current and accurate information?
2. Why are some items allowed in CINT but not allowed in other Sandia buildings?
3. Are the rules the same at the CINT Core Facility and the CINT Gateway Facility?

Prohibited Items Answers:

1. I can't remember what electronic gadgets are prohibited in CINT and the rules seem to change often. Where can I get current and accurate information?

A current list of prohibited items is available in the CINT lobby.

2. Why are some items allowed in CINT but not allowed in other Sandia buildings?

The security requirements for the work conducted in each building is the basis for what electronic devices are permitted in that building.

3. Are the rules the same at the CINT Core Facility and the CINT Gateway Facility?

No. You will need to learn the rules for the CINT Gateway if you plan to do work there.

Wireless Networks

- **Thunderbird (T-bird) Network** – provides access to the Sandia Restricted Network (SRN).
 - General SRN access is only available to employees, and on-site contractors, who are U.S. citizens or lawful permanent residents from non-sensitive countries, performing Sandia-directed work.
 - *A crypto card and VPN client software are required.*

Wireless Networks (continued)

- **Sandia Hotel Network (SHN)** – provides guests of Sandia access to the Internet while visiting the site.
 - *A username and password are required.*
 - Access is granted to visitors, including individuals who are lawful permanent residents from sensitive countries or are non-resident alien foreign nationals.
 - Sandians are not allowed to have an SHN account.
- **When you are not on the network, please make sure to turn your wireless card off so it does not try to connect to other restricted wireless networks at the facility.**

Work Planning and Control (WP&C)

- All work must be planned and controlled so that hazards are identified, analyzed, and mitigated, thus enhancing the safety of workers and members of the public, and protecting the environment.
- The Sandia Work Planning and Controls process provides a structured graded approach to the evaluation of hazards and the implementation of controls appropriate to the work being performed.
- Contact your manager or ES&H Coordinator to find out how the SNL WP&C program specifically applies to your planned work.

WP&C - Hazard Mitigation

- Each laboratory has:
 - A Primary Hazard Screening (PHSs) document (updated at least annually)
 - Associated Technical Work Documents (TWDs)
- All personnel working in laboratories must read the appropriate TWDs and provide a signature noting that the documents have been read.
- Training must be completed prior to conducting operations in any laboratory.



Training

- Required general training:
 - CINT100 (*This course!*)
 - ESH100
- Other
 - Lab specific training courses
 - Hazard-specific training courses

Work Planning Questions:

1. I finished the experiments that I planned to do in my user proposal two weeks early. Can I do more research with the instrument in the lab next door?
2. I'm a U.S. citizen. Am I allowed to work alone in the lab late at night?
5. I saw a CINT "tour group" being escorted into a lab by a CINT scientist. Is that safe?

Work Planning Answers:

1. I finished the experiments that I planned to do in my user proposal two weeks early. Can I do more research with the instrument in the lab next door?

It depends on the content of the PHS for the lab and whether the training requirements differ from the first lab.

2. I'm a U.S. citizen. Am I allowed to work alone in the lab late at night?

Yes, but you should tell your supervisor you're going to be there.

5. I saw a CINT "tour group" being escorted into a lab by a CINT scientist. Is that safe?

Yes, if the scientist follows the escort requirements and informs all visitors of the hazards they may be exposed to and the precautions to be taken while in the lab.

Environmental Management

- The Environmental Management Systems (EMS) is a continuing cycle of planning, implementing, evaluating, and improving processes to achieve environmental goals. Sandia National Laboratories' EMS provides an integrated approach for management and members of the workforce to identify and manage environmental risks.
- Once again, you can find out more about how the SNL EMS program applies to your planned work activities by contacting your manager or ES&H Coordinator.

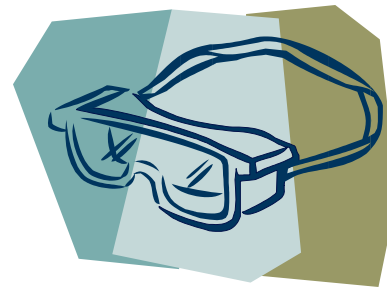
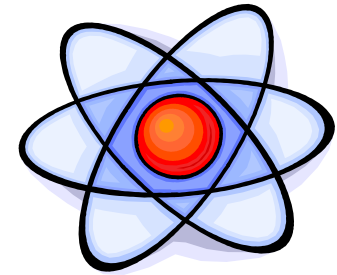
Hazardous Waste



- Hazardous wastes must be identified and collected separately from other wastes to ensure proper handling and disposal.
- Disposal of hazardous materials down sink or floor drains is strictly prohibited.
- ENV112 training is required for all Members of the Workforce at SNL/NM who generate, treat, store, or request disposal of material identified as hazardous waste.
- The SNL/NM Chemical Information System (CIS) tracks chemicals or chemical products from purchase to disposal. The CIS can help you locate an MSDS for your chemical waste.

General Hazards

- Chemicals
- Lasers
- Ionizing and non-ionizing radiation
- Biological materials
- Pressure/Thermal/Electrical



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Chemicals

- A large number of chemicals are stored and used within the building. The hazards from these materials can include flammability, toxicity, and damage to specific tissues such as eyes, skin, or lungs, depending on the type and level of exposure.
- Due to these hazards a number of controls have been implemented including: ventilation, quantity limits, storage and segregation requirements, container labeling, handling procedures, training, signage, and use of personal protective equipment (PPE.)

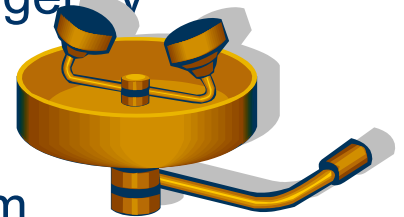
Chemicals (continued)



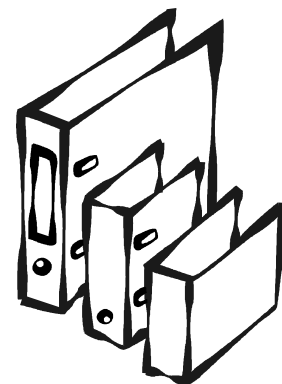
- Purchasing
 - At SNL/NM, chemical substances should be purchased through the SNL Just-in-Time (JIT) chemical supplier.
 - The JIT system automatically affixes a tracking barcode label to the chemical container so that the chemical is immediately entered into the SNL inventory with an appropriate MSDS.
 - If at anytime a chemical container needs a barcode label, call the CIS/NM Helpline at 844-MSDS for bar-coding service and other CIS related questions.

Chemicals (continued)

- Training
 - CHM100 and CHM103 are required for Members of the Workforce who perform activities that involve potential exposure to hazardous chemicals.
 - The OSHA Lab Standard requires that Members of the Workforce are trained on how to protect themselves from exposure to hazardous chemicals, including emergency procedures.
- Signage
 - The Sandia Workplace Hazard Awareness System (SWHAS) is used to identify hazards within each laboratory.



Chemicals (continued)



- Technical Work Documents (TWDs)
 - Sandia uses Technical Work Documents (TWDs) that describe safety and health considerations when work involves the use of chemicals.
 - The Standard Operating Procedure (SOP) for working with chemicals contains additional information on purchasing, storage and disposal, housekeeping, fume-hood use, glove charts, and flammable, combustible, explosive, deteriorating, and incompatible chemical information.
- Housekeeping
 - Work areas must be kept clean and organized.
 - Chemicals must be stored properly when not in use and at the end of the workday.



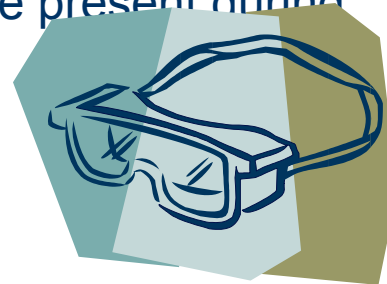
Lasers



- Lasers

Many different types of lasers are used in the research conducted within Building 518.

- LAS202, Fundamentals of Laser Safety, is required for all users of Class 3B and 4 lasers at SNL/NM.
- Rooms with these classes of lasers are marked with signs and have door interlocks and entry controls to prevent inadvertent exposure.
- Proper eye protection is available and is required to be worn whenever personnel are present during beam operation.



Hazard Questions:

1. I work with lasers every day back at my university. Why do I need to be trained by Sandia?
2. I want to reduce waste and pollution. Is it OK for me to recycle empty glass bottles from the lab?
3. I'm a CINT user and not a Sandia employee. Why do I have to follow your rules?

Hazard Answers:

1. I work with lasers every day back at my university. Why do I need to be trained by Sandia?

Safety training is not identical at all institutions. Prior training may not be sufficient for the hazards present at CINT.

2. I want to reduce waste and pollution. Is it OK for me to recycle empty glass bottles from the lab?

No, empty chemical containers cannot be placed in recycle bins. Food and beverages are never allowed in the labs, so these containers could be recycled.

3. I'm a CINT user and not a Sandia employee. Why do I have to follow your rules?

The policies of Sandia National Laboratories apply to everyone conducting work at CINT regardless of employer. Violators may lose access to CINT.

Radiation

- **Ionizing Radiation**

A small number of Radiation Generating Devices (RGDs) are used within the building. These devices use x-rays for analytical purposes.

- Custodians and operators of this equipment are required to attend training.
- Radiation levels are quite low and dosimetry is not normally required.
- Lab owners will inform visitors of any hazards and appropriate controls.

- **Non-ionizing Radiation**

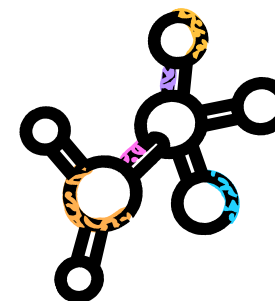
Some equipment that emits non-ionizing radiation is used at CINT.

- This type of radiation includes energy in the electromagnetic spectrum with wavelengths between 10000 meters (m) (extremely low radiofrequency) to 0.00001 cm (ultraviolet light) and with frequencies between 0 megahertz (MHz) and 3×10^9 MHz.
- Strong magnetic fields are also included here.
- Once again, lab owners will inform visitors of any hazards present from this type of radiation and the appropriate precautions to be taken.

Biological Materials

Some Bio-Hazard Level 1 and Level 2 materials are handled at the CINT facility.

- BIO105 training is required for workers handling Biological Materials at SNL/NM.
- Applicable safety requirements may be found in ESH100.2.IH.14, Procure and Work with Biological Agents.



Electrical Hazards



The risk of electric shock is greater in R&D laboratories than most other work environments.

- Electrical energy is uniquely dangerous because electricity is invisible, survival of mild shock is misleading and the use of electrical energy is widespread.
- To perform work safely, each individual must follow all applicable procedures, properly use personal protective equipment, and complete required training.
- Operating procedures, warning devices, signs, personal protective equipment, and training are controls used to minimize electrical hazards.
- It is very important to report all electrical shocks.

Pressure Hazards



Handling gas cylinders, vacuum systems, or other pressurized systems is a common component of research and development programs. Hazards can include uncontrolled gas releases, projectiles, or implosions if pressure systems are not handled properly.

- Controls include use of proper components, system design review, and training.
 - Reviews are documented using Pressure Safety Data Packages
 - Personnel trained to use or operate pressure systems are called “**Pressure Operators**”. Pressure operators do not modify or install pressure hardware, with the exception of routine operations such as changing gas cylinders and regulators.
 - Personnel trained and qualified to install, modify, or procure pressure hardware without supervision are called “**Pressure Installers**”. Pressure installers can also supervise the activities of others in performing installation or modification tasks.
 - Operators and Installers must complete PRS150, Pressure Safety Orientation training at SNL/NM.

Pressure Safety Data Packages (PSDP)

- Document compliance with hardware ratings, etc.
- Working documents which are kept current
- Contain all the information needed for future evaluations
- Used as training tools for operators
- May refer to start-up, operating, shutdown procedures (checklists, operator aids).
- Signed by: Installer, Operators, Pressure Advisor, and Manager



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Gas cylinders



- Gas cylinders require:
 - Proper storage & separation, securing, and proper identification.
 - Gas cylinder cart with safety chain with cylinder valve protection cap in place.
- Gas cylinders must be properly identified:
 - Gas ID label and CIS bar code (no color code)
 - DOT markings / DOT test date
- Gases are ordered through the JIT contractor (Matheson Tri-Gas)
 - CIS bar codes are applied and cylinders are delivered to point of use
 - 3rd party gases can be ordered through JIT
 - Return cylinders to the supplier when empty (mark for pick up)

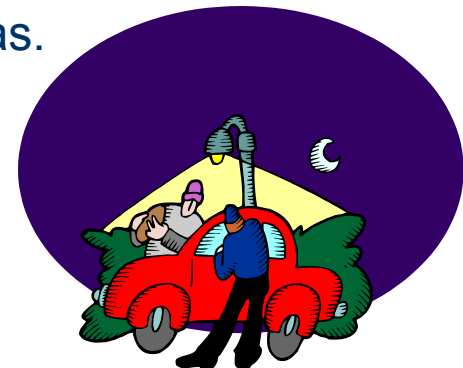
Cryogenics

- Cryogenic liquids are gases that have been transformed into extremely cold liquids which are stored at low pressures in specially constructed, multi-walled, vacuum-insulated containers.
- Common cryogen hazards:
 - Thermal (Freezing)
 - Pressure Build-up
 - Brittle Materials
 - Ice Build-up
 - Asphyxiation / O₂ deficiency
 - Oxygen Enrichment
 - Noise
 - Back strain / lifting



Other hazards to consider...

- Theft/car break-ins/personal safety
 - Unlike most other facilities at Sandia National Laboratories, CINT is located outside of Kirtland Air Force Base and lacks the additional protections provided within the Base property.
- Slips, trips, and falls
 - Care should be taken to avoid wet or icy surfaces that can be encountered when walking between CINT areas.



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Mitigation of other hazards

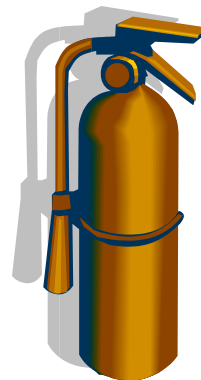




- If valuables are left in your vehicle, don't leave them in view of passers-by.
- Be vigilant when exiting the facility.
- Stay on the sidewalk, watch for curbs and be especially careful during inclement weather.

Emergency Response

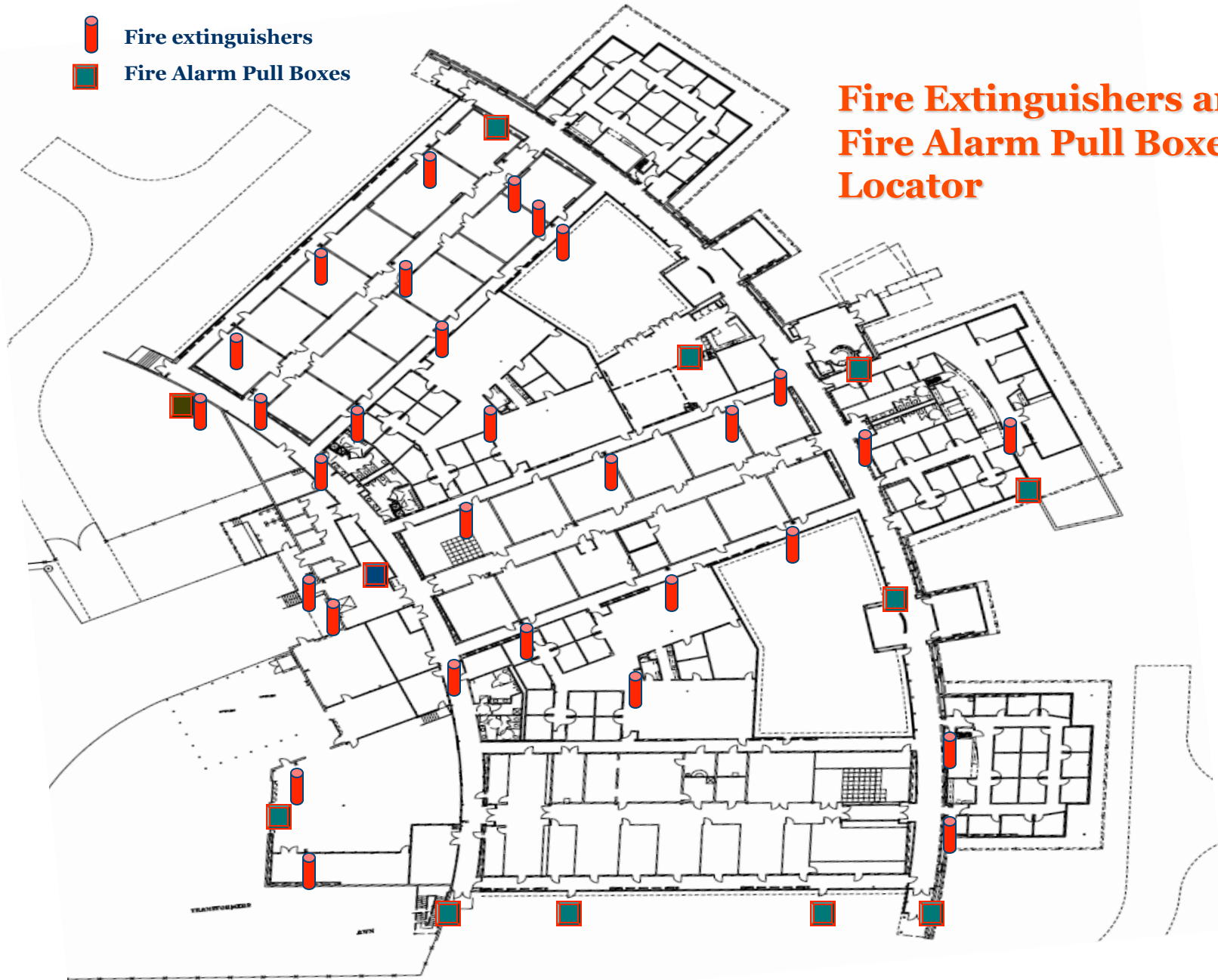


- When working in the laboratory, you should know the location of fire alarm pull-boxes, emergency shut down buttons, and emergency eyewashes and showers (next slide).
- For all incidents call the non-emergency hotline (311).
- For emergency situations, call 911 (or 844-0911 from a cell phone).
- In the event of a fire alarm please exit the Core Facility and proceed to the assembly area located in the east parking lot, unless otherwise instructed (see map following).
- Clean up small spills generated by personnel, as long as you have the correct training and equipment; if you do not feel comfortable doing so, or if the spill is large request advice or assistance from the Non-Emergency Hotline (844-6515).

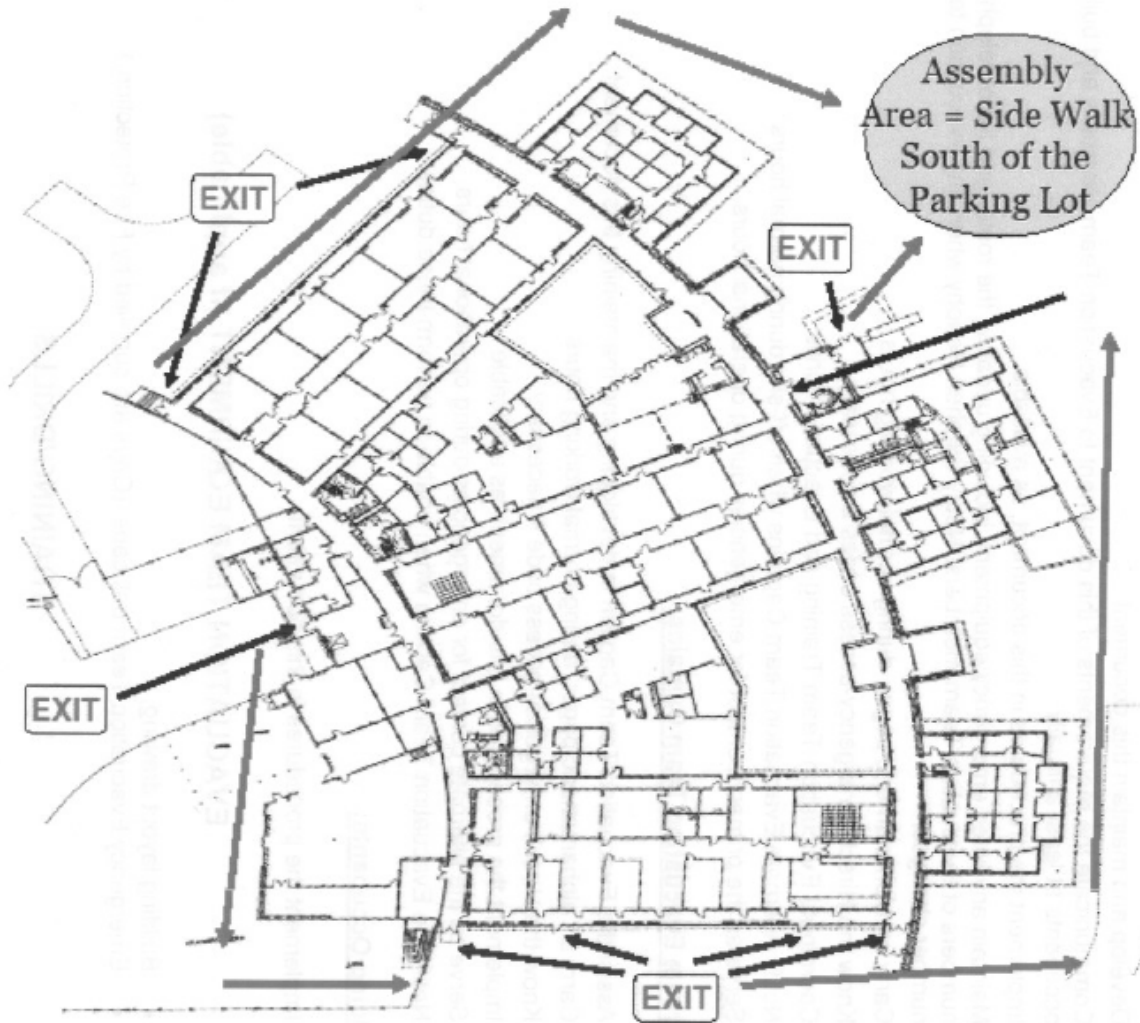


-  Fire extinguishers
-  Fire Alarm Pull Boxes

Fire Extinguishers and Fire Alarm Pull Boxes Locator



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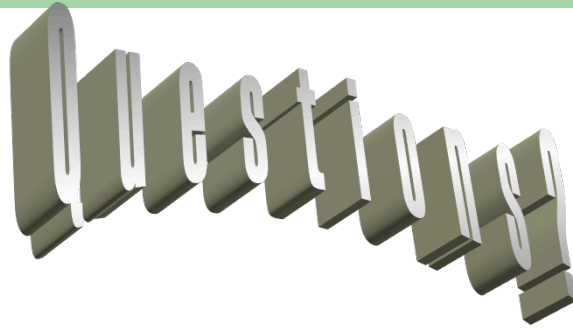
Emergency Evacuation Floor Plan

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Important numbers to remember

- 911 for emergencies (844-0911 from a cell phone)
- 311 for non-emergencies
- CINT Core and Building 897 ES&H Coordinator:
 - Bob Burkhart
 - Phone: 844-6497
 - Pager: 283-1402





For questions please contact:

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